

## ***Lobatocystis euthynni* sp. n. (Digenea: Didymozoidae) from Mackerel Tuna (*Euthynnus affinis*) from Sulawesi Island, Indonesia**

HILDA LEI CHING<sup>1,3</sup> AND R. MADHAVI<sup>2</sup>

<sup>1</sup> Hydra Enterprises Ltd, P.O. Box 2184, Vancouver, British Columbia, Canada V6B 3V7

(e-mail: hching@istar.ca) and

<sup>2</sup> Department of Zoology, Andhra University, Visakhapatnam, 530 003, India

**ABSTRACT:** *Lobatocystis euthynni* sp. n. was found encysted in pairs within the gill sinuses of mackerel tuna (*Euthynnus affinis*) from the island of Sulawesi, Indonesia. It differs from the other 2 species in the genus in having the smallest body size, unequal sizes of the partners, and no lobation on the hindbody. It differs further from both *L. yaito* Yamaguti, 1965, and *L. bengalensis* Hussain, Hanumantha Rao, and Shyamasundari, 1985, in the arrangement of the vitellaria and ovarian tubules and in the relatively large size of the tubular testes. All 3 species parasitize the same fish host with slightly different Indo-Pacific distributions. The new species co-occurs with *L. yaito* in one locality in Sulawesi.

**KEY WORDS:** *Lobatocystis euthynni*, new species, Didymozoidae, *Euthynnus affinis*, Sulawesi, Indonesia.

Although 67 heminth taxa were compiled for *Euthynnus affinis* by Pozdnyakov (1990), only 3 metazoan parasites have been reported for this fish host in Indonesia (Arthur, 1992). The first author has identified 59 taxa from mackerel tuna collected in 1994 and 1995 from 4 localities in Sulawesi (Celebes), Indonesia. In this report, a new didymozoid digenetic trematode will be described from one of the localities.

### **Materials and Methods**

Fish were purchased from fish sellers and identified by colleagues at Universitas Hasanuddin in Ujungpandang and Universitas Haluoleo in Kendari. The fish were frozen, then thawed with the gills, liver, and digestive and reproductive systems removed and examined by standard parasitological methods. Helminths were preserved unflattened in warm acetic acid-formalin-ethanol, subsequently stained with carmine, and mounted in Permount.<sup>®</sup> Measurements are given as the ranges in micrometers; the egg size includes the mean and standard deviation in parentheses. Holotype and paratypes were deposited in the U.S. National Parasite Collection (USNPC).

### **Results**

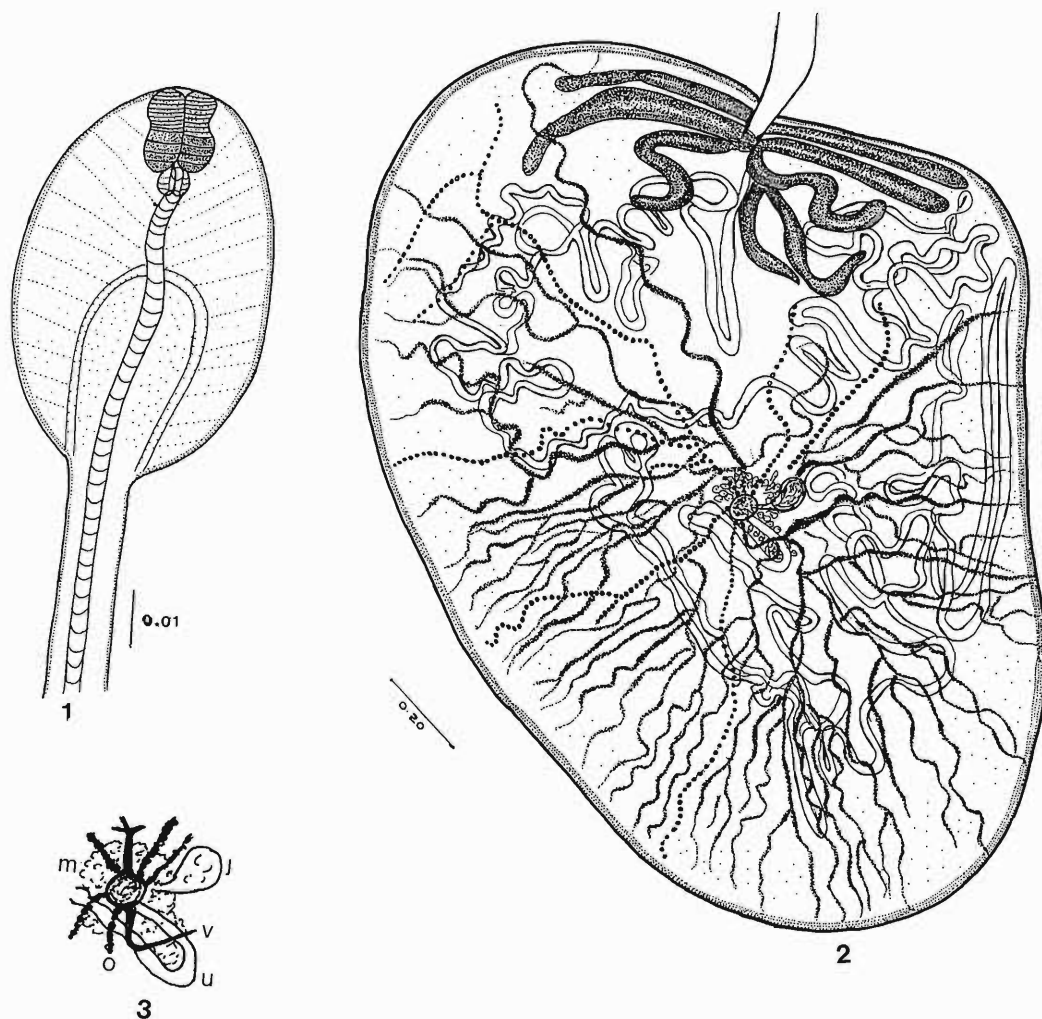
#### ***Lobatocystis euthynni* sp. n.**

(Figs. 1–3)

Family Didymozoidae, subfamily Didymozoinae. Description based on 5 specimens. Encysted in pairs, partners unequal in size, with forebodies loosely associated with each other at shallow pockets of hindbodies. Completely hermaphroditic with unequal pairs in different stag-

es of maturity, e.g., smaller of the pair less ovigerous. Forebody scoop shaped, 918–1,142 by 366–510, 49–52 at its narrowest, attached at center of hindbody in shallow pocket (Fig. 1). Oral sucker terminal, with muscular anterior, nonmuscular posterior parts, 164–219 by 90–100; pharynx rudimentary. Esophagus long, slender, dividing into ceca in midforebody; ceca narrow in forebody, not visible in hindbody. Genital pore at base of oral sucker. Hindbody triangular in shape with smooth edges, flattened anteriorly, rounded posteriorly, 1,081–3,142 by 959–1,958 (Fig. 2). Testes divided into 7–8 long, broad tubular, unbranched lobes arranged radially in anterior part of hindbody at its junction with forebody. Vas deferens sinuous, entering forebody and continuing anteriorly to end with metraterm at genital pore. Ovary comprising 7–8 long narrow branches, originating from genital complex at middle of hindbody, taking sinuous course to body periphery; branches confined mostly to posterior half of body. Mehlis gland complex situated at middle of hindbody, from which radiate vitelline, ovarian, and uterine branches (Fig. 3). Juel's organ an oval sac situated near Mehlis gland. Vitellaria largely confined to posterior half of hindbody, consisting of 7 primary branches originating as 2 groups from rounded vitelline reservoir situated adjacent to Mehlis gland. Each primary branch dividing into branches, resulting in numerous subbranches that extend to periphery of hindbody, where they terminate blindly. Uterus originating from Mehlis gland with numerous narrow coils that fill

<sup>3</sup> Corresponding author.



Figures 1-3. Holotype of *Lobatocystis euthynni* sp. n. from the gill sinus of *Euthynnus affinis*. 1. Forebody of *L. euthynni*. 2. Hindbody of *L. euthynni*. Scale of measurements in millimeters. 3. Genital complex of *L. euthynni*. j = Juel's organ, m = Mehlis gland, o = ovary, v = vitellaria, u = uterus.

entire hindbody without forming a uterine reservoir. Metraterm well developed with circular muscles, running straight anteriorly in intercecal space to join vas deferens at genital pore at base of oral sucker. Eggs small, bean shaped ( $n = 25$ ) 12-20 by 7-10 ( $14.7 \pm 1.79$  by  $8.36 \pm 1.04$ ).

#### Taxonomic summary

TYPE HOST: *Euthynnus affinis* (Cantor).

SITE IN HOST: Gill sinus.

DATE OF COLLECTION: July 1994.

PREVALENCE AND INTENSITY: 2/25, 1-2 pairs.

TYPE LOCALITY: Ujungpandang, Sulawesi Island, Indonesia.

HOLOTYPE: USNPC. 88295

PARATYPE: USNPC. 88296

ETYMOLOGY: The specific name is derived from the generic name of the host, *Euthynnus*.

#### Discussion

On the basis of the scoop-shaped forebody, triangular-shaped hindbody, radially arranged testes, and intertwining branches of the ovary and vitellaria, the didymozoid digenean was assigned to the genus *Lobatocystis* Yamaguti, 1965. The new species differs from the other 2, *L. yaito* Yamaguti, 1965, and *L. bengalensis* Hussain, Hanumantha Rao, and Shyamasundari,

1985, in the smooth hindbody, smaller body size, distribution of the ovarian and vitelline branches, and unequal size of the partners. The shape of the hindbody of *L. euthynni* is winglike, without the asymmetric lobation of *L. yaito* or the bilateral lobation of *L. bengalensis*. The hindbody is considerably smaller in size, with the holotype of *L. euthynni* measuring 3 mm in maximum length compared to more than 7–10 mm for the other 2 species. The site of *L. euthynni* is within the gill sinus in contrast to *L. yaito*, which is found on the gill arch, and *L. bengalensis*, which is reported on the “gills.” The first author has observed and collected *L. yaito* (prevalence given later) and has observed the larger size, yellow coloration, and distinct asymmetric lobation of the paired cysts loosely attached to the tissue of the gill arches.

All 3 species are reported from the same host with slightly different Indo-Pacific distributions. Yamaguti (1965, 1970) described *L. yaito* from mackerel tuna in Hawaii. The first author has found *L. yaito* in 2 of 4 localities in Sulawesi, in 2/25 fish in Ujungpandang and 4/27 fish in Kendari. These locality records are new for *L. yaito*. None of the hosts infected with *L. yaito* in Ujungpandang was infected with *L. euthynni*. Madhavi (1982) reported *L. yaito* from the Bay of Bengal, so the type species appears to have the widest distribution. Hussain et al. (1985) also described *L. bengalensis* from the Bay of Ben-

gal. All 3 helminths have low prevalence and intensity in their scombrid hosts.

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